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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEE, CHUN KUAN	

ART UNIT	PAPER NUMBER
2181	

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/777,368	RITZ ET AL.	
	Examiner	Art Unit	
	Chun-Kuan (Mike) Lee	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Hzm.Fleming

Supervisory FRITZ FLEMING PRIMARY EXAMINER 4/4/2006
GROUP 2100
AU 2181

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/07/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 19 is objected to because of the following informalities:

as per claim 19, line 1, "a access data store" should be replaces with -an access data store-. Appropriate correction is required.

Specification

2. The use of the trademark "PCI Express" has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10, 11 and 16 contain the trademark/trade name "PCI Express". Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35

U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe bus conforming to the PCI standard and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claims 1-14 and 22, the claimed subject matter as stated refers to a "system", wherein the "system", under reasonable interpretation in view of the specification on page 5, lines 25-30, can be view as a software, wherein the software along is intangible subject matter.

As per claims 17-20, upon determining whether the request is permitted or disallowed, no tangible result is produced as the result of said determination.

As per claim 21, the claimed subject matter as stated refers to a "component", wherein the "component", under reasonable interpretation in view of the specification on

page 5, lines 25-30, can be view as a software (program), wherein the software (program) along is intangible subject matter; and further more, a data field is also intangible subject matter.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 7-12 and 21-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Safranek et al. (US Pub 2004/0193755).

6. As per claim 1, Safranek teaches a direct memory access memory corruption detection system comprising:

an access data store (NoDMA table 103 and NoDMA cache 109 of Fig. 1) that stores access information associated with memory (Fig. 1, ref. 101) ([0011]); and

a memory controller (northbridge 117 of Fig. 1) that employs the access information to determine whether a requested direct memory access is permitted and rejects the requested direct memory access if it is not permitted ([0014]-[0016]).

7. As per claim 7, Safranek teaches the direct memory access memory corruption detection system comprising wherein the access information comprising at least one

permitted memory address ([0014] and [0021]), wherein certain segments of the memory do not have access restriction, therefore request for access are allowed.

8. As per claim 8, Safranek teaches the direct memory access memory corruption detection system comprising wherein the access information comprising at least one disallowed memory address ([0014] and [0021]), wherein certain segments of the memory have access restriction, therefore request for access are denied.

9. As per claim 9, Safranek teaches the direct memory access memory corruption detection system comprising wherein the request comprising a read action or a write action ([0015]).

10. As per claim 10, Safranek teaches the direct memory access memory corruption detection system comprising wherein the request comprising a PCI Express bus transaction ([0017] and [0019]).

11. As per claim 11, Safranek teaches the direct memory access memory corruption detection system comprising wherein the memory controller coupled to a device through a PCI Express bus, the device providing the request ([0017] and [0019]).

12. As per claim 12, Safranek teaches the direct memory access memory corruption detection system comprising wherein the memory controller further providing error

information, if the requested direct memory access is not permitted (Fig. 4; [0034] and [0038]), wherein the error is logged and can be utilized for subsequent analyzing.

13. As per claim 21, Safranek teaches a data packet transmitted between two or more computer components that facilitates detection of direct memory access memory corruption, the data packet comprising:

a data field comprising a corrected platform error event ([0034] and [0038]), the corrected platform error event being based, at least in part, upon a determination that a requested direct memory access is not permitted ([0034] and [0038]), the determination being based, at least in part, upon access information stored in an access table (NoDMA table cache in Fig. 3) and the requested direct memory access ([0011]-[0021]).

14. As per claim 22, Safranek teaches a direct memory access memory corruption detection system comprising:

means for storing access information associated (stored in NoDMA 103 and NoDMA cacne 109 of Fig. 1) associated with memory (Fig. 1, ref. 101);

means for receiving a request for a direct memory access ([0015]);

means for determining whether a requested direct memory access is permitted based, at least in part, upon the stored access information and the request ([0014]-[0021]); and

means for rejecting the requested direct memory access if it is not permitted ([0021]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 2-6 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Safranek et al. (US Pub 2004/0193755) in view of Kondratiev et al. (US Patent 6,922,740).

16. As per claims 2-6 and 13, Safranek further teaches the direct memory access memory corruption detection system comprising:

a request for memory access comprising of read request and write request ([0015]); and

the memory controller must distinguish the source of said request between a CPU and a non-CPU device to properly regulate access control to the memory ([0016]).

Safranek does not expressly teach the direct memory access memory corruption detection system comprising:

wherein the access information comprising an access attribute comprising one of read, read and write, and write access;

wherein the access information comprising a source identifier being associated with a device;

wherein the access table comprising a source identifier field and an access attribute field;

wherein the error information comprising wherein the source information associated with the requested direct memory access; and

an access table comprising a memory access field (Fig. 3).

Kondratiev teaches a system comprising:

an access data store comprising an access table (access control list (ACL) 210 of Fig. 2), the access table comprising a source identifier field (device ID) and an access attribute field (read and write access) (Fig. 2);

wherein the access attribute comprising one of read, read and write, and write access (read and write of Fig. 2); and

wherein the source identifier being associated with a device (I/O device 140-1 of Fig. 1 and device ID of Fig. 2).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Kondratiev's source identifier field and access attribute field into Safranek's DMA memory corruption detection system. The resulting combination of the references teach the DMA memory corruption detection system further comprising wherein the access table further comprising a source identifier field, associated with a device, and an access attribute field comprising one of read access and write access and wherein the error information further comprising the source information associated with the requested direct memory access.

Therefore, it would have been obvious to combine Kondratiev with Safranek for the benefit of increase security and reliability for accessing DMA (Kondratiev, col. 7, ll. 30-41).

17. As per claim 14, Safranek teaches a direct memory access memory corruption detection system comprising:

a memory controller (northbridge 117 of Fig. 1) that includes an access table store that stores access information (access information stored in NoDMA table 103 and NoDMA cache 109 of Fig. 1) associated with memory (Fig. 1, ref. 101), the memory controller employs the access information to determine whether a requested direct memory access is permitted and rejects the requested direct memory access if it is not permitted([0014]-[0016]).

Safranek does not expressly teach the direct memory access memory corruption detection system comprising a device driver that programs a device for a direct memory access operation, and, provides the access information to the memory controller via a direct memory access application interface.

Kondratiev teaches a system comprising

a device driver (bus master) that programs (program by invoking a function to request DMA access) a device for a direct memory access operation, and provides the access information to the memory controller via a direct memory access application interface (col. 4, ll. 6-26 and col. 6, ll. 43-53).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Kondratiev's device driver into Safranek's DMA memory corruption detection system.

Therefore, it would have been obvious to combine Kondratiev with Safranek for the benefit of increase security and reliability for accessing DMA (Kondratiev, col. 7, ll. 30-41).

18. As per claim 15, Safranek and Kondratiev teach all the limitations of claim 14 as discussed above, where Kondratiev further teaches the direct memory access memory corruption detection system further comprising the stored access information comprising a range of physical memory (access range), a source identifier (device ID), and an access attribute (read and write) (Kondratiev, Fig. 2).

19. As per claim 16, Safranek and Kondratiev teach all the limitations of claim 14 as discussed above, where Safranek teaches the direct memory access memory corruption detection system comprising wherein the request comprising a PCI Express bus transaction (Safranek, [0017] and [0019]).

20. As per claim 17, Safranek teaches a method that facilitates detection of direct memory access memory corruption comprising:

receiving a request for a direct memory access transaction, the request comprising at least one memory address ([0014]-[0021]); and

determining whether the request is permitted based, at least in part, stored access information (NoDMA 103 and NoDMA cacne 109 of Fig. 1) and the request ([0014]-[0021]).

Safranek does not expressly teach the method that facilitates detection of direct memory access memory corruption comprising wherein the request comprising a source identifier and a transaction access attribute.

Kondratiev teaches a system comprising

an access data store comprising an access table (access control list (ACL) 210 of Fig. 2), the access table comprising a source identifier field (device ID) and a transaction access attribute (read and write access) (Fig. 2).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Kondratiev's source identifier field and transaction access attribute into Safranek's method that facilitates detection of direct memory access memory corruption. The resulting combination of the references teach the method that facilitates detection of DMA memory corruption further comprising wherein the access request further comprising a source identifier and a transaction access attribute.

Therefore, it would have been obvious to combine Kondratiev with Safranek for the benefit of increase security and reliability for accessing DMA (Kondratiev, col. 7, ll. 30-41).

21. As per claim 18, Safranek and Kondratiev teach all the limitations of claim 17 as discussed above, where Kondratiev further teaches the method that facilitates detection of direct memory access memory corruption comprising the stored access information comprising a source identifier (deviceID), at least one memory address (access range) and an access attribute (read and write) (Kondratiev, ACL 210 Fig. 2).

22. As per claim 19, Safranek and Kondratiev teach all the limitations of claim 17 as discussed above, where Kondratiev further teaches the method that facilitates detection of direct memory access memory corruption comprising storing access information in a access data store, the access information comprising a source identifier (device ID), at least one memory address (access range) and an access attribute (read and write) (Kondratiev, ACL 210 Fig. 2).

23. As per claim 20, Safranek and Kondratiev teach all the limitations of claim 17 as discussed above, where Safranek further teaches the method that facilitates detection of direct memory access memory corruption comprising a computer readable medium having stored thereon computer executable instructions for carrying out the method (Safranek, [0039]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz M. Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.K.L.
03/21/2006

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